COMPLETE LISTING OF CLAIMS

IN ASCENDING ORDER WITH STATUS INDICATOR

Please amend claims 16 and 20.

Claims 1-15: (cancelled)

16. (currently amended) A resist pattern forming method, comprising the steps of:

(a) forming a resist film on a surface of a substrate with a base film and a base pattern being formed thereon, by holding the substrate horizontally ~~at~~ with a substrate holder and supplying a resist solution from a nozzle thereto and rotating the substrate holder to spread the resist solution by a centrifugal force;

(b) exposing the substrate coated with the resist solution while being disposed at a focus point of a lens in an exposing portion having a light source and the lens, by radiating a ray of a predetermined intensity for a predetermined time period, using a predetermined pattern mask;

(c) developing the exposed resist on the surface of the substrate by supplying a developing solution of a predetermined temperature on the exposed resist and leaving the supplied developing solution for a predetermined time period;

(d) measuring data of at least one of measurement items selected from: a reflection ratio and a film thickness of the base film, a film thickness of the resist film, a line width after the development, an accuracy that the base pattern matches with a resist pattern, and a defect on the surface after the development;

(e) amending a set value based on a measured data selected from at least one of the parameters subject to the amendment, according to a contribution degree of each of the parameters: a rotating speed, a degree of acceleration and a position of the nozzle when coating the resist solution, a time period for the development and a temperature of the developing solution when developing the substrate, an intensity of the ray radiated from the exposing portion to the substrate, a time period for the exposure, an alignment of the exposing portion and the substrate, and a distance between the focus point of the exposing portion and the substrate, the contribution degree (μ) being obtained by an analysis of an unit amount being a degree of an effect given to the reflection ratio and the film thickness of the base film, the film thickness of the resist film, the line width after the development, the accuracy that the base pattern matches with the resist pattern, and the defect on the surface after the development, when the set value of

each of the parameters is subjected to amendment of: the rotating speed, the degree of acceleration and the position of the nozzle when coating the resist solution, the time period for the development and the temperature of the developing solution when developing the substrate, the intensity of the ray radiated from the exposing portion to the substrate, the time period for the exposure, an alignment of the exposing portion and the substrate, and the distance between the focus point of the exposing portion and the substrate, and the contribution degree is represented by coefficients ~~μ_1, μ_2, μ_3 and μ_4 etc., when~~ μ_1, μ_2, μ_3 and μ_4, when the film thickness of the resist is Rt, the temperature of the resist solution is Tr, the temperature in the coating unit is Tc, and the humidity and the atmospheric pressure in the coating unit are Hc and P respectively, the following formula is given:

$$Rt=\alpha(\mu_1 Tr+\mu_2 Tc+\mu_3 Hc+\mu_4 P)$$

where α is a constant;

wherein the step (e) amends the set value of the parameters subject to amendment with a priority such that the parameter with higher contribution degree is amended prior to the parameter with lower contribution degree.

17. (previously presented) The method, as set forth in claim 16,

wherein the step (e) amends the set value corresponding to the measured item out of a plurality of said parameters subject to the amendment, when the measured data of at least one of the reflection ratio of the base film and the film thickness of the base film is over a permissible range and within a range of the amendment, selected from at least one of the parameters subject to the amendment according to the contribution degree of each of the parameters: the rotating speed and the degree of acceleration of the substrate holder, the time period for the development, the intensity of the ray radiated from the exposing portion to the substrate, and the time period for the exposure.

18. (previously presented) The method, as set forth in claim 16,

wherein the step (e) amends the set value corresponding to the measured item out of a plurality of said parameters subject to the amendment, when the measured data of the thickness of the resist film is over a permissible range and within a range of the amendment, selected from at least ~~for~~ one of the parameters subject to the amendment according to the contribution degree of each of the parameters: the rotating speed and the degree of acceleration of the substrate

holder, the time period for the development, the intensity of the ray radiated from the exposing portion to the substrate, and the time period for the exposure.

19. (previously presented) The method, as set forth in claim 16, further comprising the step of:

heating the substrate after the application of the resist solution and the exposure, at a predetermined temperature for a predetermined time period;

wherein the step (e) amends the set value corresponding to the measured item out of a plurality of said parameters subject to the amendment when the measured data of the developed line width is over a permissible range and within a range of the amendment selected from at least one of the parameters subject to the amendment according to the contribution degree of each of the parameters: the rotating speed and the degree of acceleration of the substrate holder, the time period for the development, the temperature of the developing solution, the intensity of the ray radiated from the exposing portion to the substrate, the time period for the exposure, the distance between the focus point of the exposing portion and the substrate, and a time period for heating and a temperature for heating.

20. (currently amended) The method as set forth in claim 16,

wherein the step (e) amends the set value corresponding to the measured item out of a plurality of said parameters subject to the amendment when the measured data of the accuracy that the base pattern matches with the resist pattern after the development process is over a permissible range and within a range of the amendment selected from a parameter of an alignment of the exposing portion and the substrate.

21. (previously presented) The method, as set forth in claim 16,

wherein the step (e) amends the set value ~~of~~ corresponding to measured item out of a plurality of said parameters subject to the amendment when the measured data of the defect on the surface of the substrate is over a permissible range and within a range of the amendment, selected from at least one of the parameters subject to the amendment according to the contribution degree of each of the parameters: the position of the nozzle, the time period for the development and the temperature of the developing solution in the development step, the intensity of the ray radiated from the exposing portion to the substrate, the time period for the

exposure, and the distance between the focus point of the exposing portion and the substrate.

22. (previously presented) The method, as set forth in claim 16, further comprising the steps of:

heating the substrate after the application of the resist solution and the exposure, at a predetermined temperature for a predetermined time period and etching the substrate by supplying an etching gas of a predetermined composition ratio to the substrate for a predetermined time period then measuring a line width of the etched line; and

wherein the step (e) amends the set value based on the measured data of the etched line width when the measured data of the etched line width after the etching is over a permissible range and within a range of the amendment, selected from at least one of the plurality of parameters subject to the amendment according to the contribution degree of each of the parameters: the rotating speed and the degree of acceleration of the substrate holder, the time period for the development, the temperature of the developing solution, the time period for the exposure, the intensity of the ray radiated from the exposing portion to the substrate, the distance between the focus point of the exposing portion and the substrate, the time period for the heating and the temperature for the heating.

23. (previously presented) The method, as set forth in claim 22,

wherein the step (e) amends the set value based on the measured data of the etched line width when the measured data of the etched line width after the etching is over a permissible range and within a range of the amendment, selected from at least one of the plurality of parameters subject to the amendment according to the contribution degree of each of the parameters: the rotating speed and the degree of acceleration of the substrate holder, the time period for the development, the temperature of the developing solution, the time period for the exposure, the intensity of the ray radiated from the exposing portion to the substrate, the distance between the focus point of the exposing portion and the substrate, the time period for the heating and the temperature for the heating.

24. (canceled)

25. (canceled)

26. (previously presented) The method, as set forth in claim 16, further comprising the step of:

outputting an alarm when the measured data of the measured item is out of a range of the amendment.

27. (previously presented) The method, as set forth in claim 16,

wherein the amendment of the set value of the parameters subject to amendment according to the contribution degree is performed manually by an operator.

28. (previously presented) The method, as set forth in claim 22,

wherein the step (e) amends the set value based on the measured data of the etched line width when the measured data of the etched line width after the etching is over a permissible range and within a range of the amendment, selected from at least one of the plurality of parameters subject to the amendment: the rotating speed and the degree of acceleration of the substrate holder, the time period for the development, the temperature of the developing solution, the time period for the exposure, the intensity of the ray radiated from the exposing portion to the substrate, the distance between the focus point of the exposing portion and the substrate, the time period for the heating and the temperature for the heating according to a contribution degree of each of the parameters; and

the step (e) further comprising the step of:

amending the contribution degree by identifying the process that caused a defect and comparing a result of a surface inspection performed after the etching processing with a result of surface inspection performed after the development processing.

29. (previously presented) The method, as set forth in claim 28, further comprising the step of:

cleaning the substrate not passing the surface inspection conducted after at least one of etching processing and developing processing so that the resist coated on the substrate is dissolved and removed.

30. (previously presented) A resist pattern forming method, comprising the steps of:

(a) forming a resist film on a surface of a substrate with a base film and a base pattern being formed thereon, by holding the substrate horizontally ~~at~~ with a substrate holder and supplying a resist solution from a nozzle thereto and rotating the substrate holder to spread the resist solution by a centrifugal force;

(b) exposing the substrate coated with the resist solution while being disposed at a focus point of a lens in an exposing portion having a light source and the lens, by radiating a ray of a predetermined intensity for a predetermined time period, using a predetermined pattern mask;

(c) developing the exposed resist on the surface of the substrate by supplying a developing solution of a predetermined temperature on the exposed resist and leaving the supplied developing solution for a predetermined time period;

(d) measuring data of at least one of measurement items selected from: a reflection ratio and a film thickness of the base film, a film thickness of the resist film, a line width after the development, an accuracy that the base pattern matches with a resist pattern, and a defect on the surface after the development;

(e) amending a set value based on a measured data selected from at least one of the parameters subject to the amendment, according to a contribution degree of each of the parameters: a rotating speed, a degree of acceleration and a position of the nozzle when coating the resist solution, a time period for the development and a temperature of the developing solution when developing the substrate, an intensity of the ray radiated from the exposing portion to the substrate, a time period for the exposure, an alignment of the exposing portion and the substrate, and a distance between the focus point of the exposing portion and the substrate,

wherein the step (e) amends the set value of each of the parameters subject to amendment with a priority such that the parameter with higher contribution degree is amended prior to the parameter with lower contribution degree.